GENETICS

A PERIODICAL RECORD OF INVESTIGATIONS
BEARING ON HEREDITY AND VARIATION

FOUNDED IN 1916

and published by

THE GENETICS SOCIETY OF AMERICA

VOLUME 161, MAY–AUGUST 2002

EDITORIAL BOARD

ELIZABETH W. JONES, *Editor-in-Chief*
Carnegie Mellon University, Pittsburgh, PA

MONTSERRAT AGUADÉ (2002)
Universitat de Barcelona

SALLY LYMAN ALLEN (2003)
University of Michigan

KATHRYN V. ANDERSON (2002)
Sloan-Kettering Institute

PHILIP ANDERSON (2002)
University of Wisconsin

BRENDA J. ANDREWS (2003)
University of Toronto

NORMAN ARNHEIM (2002)
University of Southern California

MARJORIE A. ASMUSSEN (2003)
University of Georgia

BONNIE L. BASSLER (2004)
Princeton University

JAMES A. BIRCHLER (2002)
University of Missouri

DAVID BOTSTEIN (2003)
Stanford University School of Medicine

ANTHONY H. D. BROWN (2003)
CSIRO Division of Plant Industry

VICKI L. CHANDLER (2004)
University of Arizona

DEBORAH CHARLESWORTH (2002)
University of Edinburgh

GARY A. CHURCHILL (2003)
The Jackson Laboratory

MARCUS W. FELDMAN (2003)
Stanford University

YUN-XIN FU (2004)
University of Texas, Houston

CHARLES S. GASSER (2002)
University of California, Davis

G. BRIAN GOLDING (2003)
McMaster University

KENT GOLIC (2002)
University of Utah

DAVID JONAH GRUNWALD (2004)
University of Utah

CHRIS HALEY (2003)
Roslin Institute (Edinburgh)

MICHAEL HAMPSEY (2004)
Robert Wood Johnson Medical School-UMDNJ

RICHARD HARRISON (2003)
Cornell University

R. SCOTT HAWLEY (2003)
University of California, Davis

JOTUN HEIN (2003)
University of Aarhus

STEVEN HENIKOFF (2004)
Fred Hutchinson Cancer Center

JODY HEY (2004)
Rutgers University

NANCY A. JENKINS (2004)
National Cancer Institute-FCRDC

MARK JOHNSTON (2003)
Washington University School of Medicine

THOMAS C. KAUFMAN (2003)
Indiana University

PETER D. KEIGHTLEY (2002)
University of Edinburgh

DAVID KINGSLEY (2003)
Stanford University School of Medicine

CHRISTINE KOZAK (2002)
National Institute of Health-NIAID

MICHAEL LICHTEN (2003)
National Cancer Institute

A. JAVIER LOPEZ (2002)
Carnegie Mellon University

JENNIFER J. LOROS (2004)
Dartmouth Medical School

SUSAN LOVETT (2004)
Brandeis University

TRUDY F. C. MACKAY (2002)
North Carolina State University

BARBARA J. MEYER (2002)
University of California, Berkeley

AARON P. MITCHELL (2004)
Columbia University

ALAIN NICOLAS (2003)
Institut Curie

MOHAMED NOOR (2003)
Louisiana State University

HOWARD OCHMAN (2002)
University of Arizona

SARA P. OTTO (2004)
University of British Columbia

ANDREW PATERSON (2004)
University of Georgia

LORRAINE PILLUS (2003)
University of California, San Diego

PATRICIA J. PUKKILA (2004)
University of North Carolina

MARK D. ROSE (2004)
Princeton University

PAUL RUSSELL (2002)
The Scripps Research Institute

MATTHEW S. SACHS (2004)
Oregon Health and Science University

SUZANNE SANDMEYER (2004)
University of California, Irvine

OUTI SAVOLAINEN (2002)
University of Oulu

STEPHEN W. SCHAEFFER (2003)
The Pennsylvania State University

TRUDI SCHÜPBACH (2002)
Princeton University

MICHAEL J. SIMMONS (2003)
University of Minnesota

GERALD R. SMITH (2004)
Fred Hutchinson Cancer Center

ABRAHAM L. SONENSHEIN (2004)
Tufts University School of Medicine

TIM STEARNS (2004)
Stanford University

WOLFGANG STEPHAN (2003)
University of Munich

VENKATESAN SUNDARESAN (2003)
Institute of Molecular Agrobiology

LORRAINE S. SYMINGTON (2002)
Columbia University College of Physicians and Surgeons

NAOYUKI TAKAHATA (2002)
Graduate University, Kanagawa

SIMON TAVARÉ (2002)
University of Southern California

MARCY K. UYENOYAMA (2004)
Duke University

JOHAN A. M. VAN ARENDONK (2002)
Wageningen Agricultural University

MICHEL A. VEUILLE (2003)
Ecole Pratique des Hautes Etudes, Paris

J. BRUCE WALSH (2002)
University of Arizona

FRED WINSTON (2003)
Harvard Medical School

CHUNG-I WU (2002)
University of Chicago

SHOZO YOKOYAMA (2003)
Syracuse University

ZHAO-BANG ZENG (2002)
North Carolina State University

MIRIAM E. ZOLAN (2004)
Indiana University

Managing Editor, LEAH KAUFFMAN
Published at Baltimore, Maryland
by the GENETICS SOCIETY OF AMERICA

Pre-publication services and printing by Capital City Press, Inc.

VOLUME CONTENTS

to Volume 161, May–August, 2002

ABRUZZI, KATHARINE C., MARGARET MAGENDANTZ AND FRANK SOLOMON, An α-tubulin mutant demonstrates distinguishable functions among the spindle assembly checkpoint genes in *Saccharomyces cerevisiae* 983–994

ALTSCHMIED, JOACHIM, JACQUELINE DELFGAAUW, BRIGITTA WILDE, JUTTA DUSCHL, LAURENCE BOUNEAU, JEAN-NICOLAS VOLFF AND MANFRED SCHARTL, Subfunctionalization of duplicate *mitf* genes associated with differential degeneration of alternative exons in fish 259–267

AMUNDSEN, SUSAN K., ANDREW F. TAYLOR AND GERALD R. SMITH, A domain of RecC required for assembly of the regulatory RecD subunit into the *Escherichia coli* RecBCD holoenzyme .. 483–492

AUSTERLITZ, FRÉDÉRIC, AND PETER E. SMOUSE, Two-generation analysis of pollen flow across a landscape. IV. Estimating the dispersal parameter 355–363

BAIRD, SCOTT EVERET, Haldane's rule by sexual transformation in Caenorhabditis 1349–1353

BARLOW, MIRIAM, AND BARRY G. HALL, Predicting evolutionary potential: *In vitro* evolution accurately reproduces natural evolution of the TEM β-lactamase 1355

BATEMAN, JOSEPH M., PHILIP S. PERLMAN AND RONALD A. BUTOW, Mutational bisection of the mitochondrial DNA stability and amino acid biosynthetic functions of Ilv5p of budding yeast 1043–1052

BELLONI, MASSIMO, PATRIZIA TRITTO, MARIA PIA BOZZETTI, GIOACCHINO PALUMBO AND LEONARD G. ROBBINS, Does *Stellate* cause meiotic drive in *Drosophila melanogaster*? 1551–1559

BERRY, DONALD A., JON D. SELTZER, CHONGQING XIE, DEANNE L. WRIGHT AND J. STEPHEN C. SMITH, Assessing probability of ancestry using simple sequence repeat profiles: Applications to maize hybrids and inbreds 813–824

BIBIKOVA, MARINA, MARY GOLIC, KENT G. GOLIC AND DANA CARROLL, Targeted chromosomal cleavage and mutagenesis in Drosophila using zinc-finger nucleases 1169–1175

BIELAWSKI, JOSEPH P., AND JOHN R. GOLD, Mutation patterns of mitochondrial H- and L-strand DNA in closely related cyprinid fishes 1589–1597

BRONIKOWSKI, ANNE M., THEODORE J. MORGAN, THEODORE GARLAND, JR. AND PATRICK A. CARTER, Antioxidant gene expression in active and sedentary house mice (*Mus domesticus*) selected for high voluntary wheel-running behavior 1763–1769

BURKE, JOHN M., SHUNXUE TANG, STEVEN J. KNAPP AND LOREN H. RIESEBERG, Genetic analysis of sunflower domestication 1257–1267

BUTLER, DAVID K., DAVID GILLESPIE AND BRANDI STEELE, Formation of large palindromic DNA by homologous recombination of short inverted repeat sequences in *Saccharomyces cerevisiae* 1065–1075

CAI, TI, JASON AULDS, TINA GILL, MICHAEL CERIO AND MARK E. SCHMITT, The *Saccharomyces cerevisiae* RNase mitochondrial RNA processing is critical for cell cycle progression at the end of mitosis 1029–1042

CASACUBERTA, ELENA, AND MARY-LOU PARDUE, Coevolution of the Telomeric retrotransposons across Drosophila species 1113–1124

CASA-ESPERÓN, ELENA DE LA, J. CONCEPCIÓN LOREDO-OSTI, FERNANDO PARDO-MANUEL DE VILLENA, TAMMI L. BRISCOE, JAN MICHEL MALETTE, JOE E. VAUGHAN, KENNETH MORGAN AND CARMEN SAPIENZA, *X* chromosome effect on maternal recombination and meiotic drive in the mouse 1651–1659

Chai, Bob, Jing-mei Hsu, Jian Du and Brehon C. Laurent, Yeast RSC function is required for organization of the cellular cytoskeleton via an alternative *PKC1* pathway 575–584

Comeron, Josep M., and Martin Kreitman, Population, evolutionary and genomic consequences of interference selection 389–410

Coveny, Angela M., Tammy Dray and Gregory B. Gloor, The effect of heterologous insertions on gene conversion in mitotically dividing cells in *Drosophila melanogaster* 249–258

Craven, Rolf J., Patricia W. Greenwell, Margaret Dominska and Thomas D. Petes, Regulation of genome stability by *TEL1* and *MEC1*, yeast homologs of the mammalian ATM and ATR genes 493–507

Crow, James F., C. C. Little, cancer and inbred mice 1357–1361

de Koning, Dirk-Jan, Henk Bovenhuis and Johan A. M. van Arendonk, On the detection of imprinted quantitative trait loci in experimental crosses of outbred species 931–938

Doganlar, Sami, Anne Frary, Marie-Christine Daunay, Richard N. Lester and Steven D. Tanksley, A comparative genetic linkage map of eggplant (*Solanum melongena*) and its implications for genome evolution in the Solanaceae 1697–1711

Doganlar, Sami, Anne Frary, Marie-Christine Daunay, Richard N. Lester and Steven D. Tanksley, Conservation of gene function in the Solanaceae as revealed by comparative mapping of domestication traits in eggplant 1713–1726

Drummond, Alexei J., Geoff K. Nicholls, Allen G. Rodrigo and Wiremu Solomon, Estimating mutation parameters, population history and genealogy simultaneously from temporally spaced sequence data 1307–1320

DuBois, Michelle L., Zara W. Haimberger, Martin W. McIntosh and Daniel E. Gottschling, A quantitative assay for telomere protection in *Saccharomyces cerevisiae* 995–1013

Duncan, Ian, and Geoffrey Montgomery, E. B. Lewis and the bithorax complex: Part II. From *cis-trans* test to the genetic control of development 1–10

Dunford, Roy P., Masahiro Yano, Nori Kurata, Takuji Sasaki, Gordon Huestis, Torbert Rocheford and David A. Laurie, Comparative mapping of the barley *Ppd-H1* photoperiod response gene region, which lies close to a junction between two rice linkage segments 825–834

Espagne, Eric, Pascale Balhadère, Marie-Louise Penin, Christian Barreau and Béatrice Turcq, HET-E and HET-D belong to a new subfamily of WD40 proteins involved in vegetative incompatibility specificity in the fungus *Podospora anserina* 71–81

Farah, Joseph A., Edgar Hartsuiker, Kenichi Mizuno, Kunihiro Ohta and Gerald R. Smith, A 160-bp palindrome is a Rad50•Rad32-dependent mitotic recombination hotspot in *Schizosaccharomyces pombe* 461–468

Farnir, Frédéric, Bernard Grisart, Wouter Coppieters, Juliette Riquet, Paulette Berzi, Nadine Cambisano, Latifa Karim, Myriam Mni, Sirja Moisio, Patricia Simon, Danny Wagenaar, Johanna Vilkki and Michel Georges, Simultaneous mining of linkage and linkage disequilibrium to fine map quantitative trait loci in outbred half-sib pedigrees: Revisiting the location of a quantitative trait locus with major effect on milk production on bovine chromosome 14 275–287

Firon, Arnaud, Anne Beauvais, Jean-Paul Latgé, Elisabeth Couvé, Marie-Claire Grosjean-Cournoyer and Christophe d'Enfert, Characterization of essential genes by parasexual genetics in the human fungal pathogen *Aspergillus fumigatus*: Impact of genomic rearrangements associated with electroporation of DNA 1077–1087

Froissard, Marine, Roland Kissmehl, Jean-Claude Dedieu, Tadeusz Gulik-Krzywicki, Helmut Plattner and Jean Cohen, *N*-Ethylmaleimide-sensitive factor is required to organize functional exocytotic microdomains in Paramecium 643–650

Fry, James D., and Stefanie L. Heinsohn, Environment dependence of mutational parameters for viability in *Drosophila melanogaster* 1155–1167

Fujita, Masaaki, Reiko Sugiura, Yabin Lu, Linxiao Xu, Yujie Xia, Hisato Shuntoh and Takayoshi Kuno, Genetic interaction between calcineurin and type 2 myosin and their involvement in the regulation of cytokinesis and chloride ion homeostasis in fission yeast . 971–981

Fujitani, Youhei, Shintaro Mori and Ichizo Kobayashi, A reaction-diffusion model for interference in meiotic crossing over 365–372

Gadau, J., R. E. Page and J. H. Werren, The genetic basis of the interspecific differences in wing size in Nasonia (Hymenoptera; Pteromalidae): Major quantitative trait loci and epistasis 673–684

Garber, Peter M., and Jasper Rine, Overlapping roles of the spindle assembly and DNA damage checkpoints in the cell-cycle response to altered chromosomes in *Saccharomyces cerevisiae* 521–534

Garigan, Delia, Ao-Lin Hsu, Andrew G. Fraser, Ravi S. Kamath, Julie Ahringer and Cynthia Kenyon, Genetic analysis of tissue aging in *Caenorhabditis elegans*: A role for heat-shock factor and bacterial proliferation 1101–1112

Gelperin, Daniel, Lynn Horton, Anne DeChant, Jack Hensold and Sandra K. Lemmon, Loss of Ypk1 function causes rapamycin sensitivity, inhibition of translation initiation and synthetic lethality in 14-3-3-deficient yeast 1453–1464

Gentile, Gabriele, Alessandra della Torre, Bertha Maegga, Jeffrey R. Powell and Adalgisa Caccone, Genetic differentiation in the African malaria vector, *Anopheles gambiae* s.s., and the problem of taxonomic status 1561–1578

Georgiady, Michael S., Richard W. Whitkus and Elizabeth M. Lord, Genetic analysis of traits distinguishing outcrossing and self-pollinating forms of currant tomato, *Lycopersicon pimpinellifolium* (Jusl.) Mill. 333–344

Golding, G. Brian, Reconstructing the prior probabilities of allelic phylogenies 889–896

González, Josefa, José María Ranz and Alfredo Ruiz, Chromosomal elements evolve at different rates in the Drosophila genome 1137–1154

Gordo, Isabel, Arcadio Navarro and Brian Charlesworth, Muller's ratchet and the pattern of variation at a neutral locus 835–848

Graustein, Andrew, John M. Gaspar, James R. Walters and Michael F. Palopoli, Levels of DNA polymorphism vary with mating system in the nematode genus Caenorhabditis 99–107

Graw, Jochen, Angelika Neuhäuser-Klaus, Jana Löster, Norman Klopp and Jack Favor, Ethylnitrosourea-induced base pair substitution affects splicing of the mouse γE-crystallin encoding gene leading to the expression of a hybrid protein and to a cataract 1633–1640

Hagenblad, Jenny, and Magnus Nordborg, Sequence variation and haplotype structure surrounding the flowering time locus *FRI* in *Arabidopsis thaliana* 289–298

Hahn, Matthew W., Mark D. Rausher and Clifford W. Cunningham, Distinguishing between selection and population expansion in an experimental lineage of bacteriophage T7 11–20

Hardiman, Kirsten E., Rachel Brewster, Shaema M. Khan, Monika Deo and Rolf Bodmer, The *bereft* gene, a potential target of the neural selector gene *cut*, contributes to bristle morphogenesis 231–247

Hartweck, Lynn M., Cheryl L. Scott and Neil E. Olszewski, Two *O*-linked *N*-acetylglucosamine transferase genes of *Arabidopsis thaliana* L. Heynh. have overlapping functions necessary for gamete and seed development 1279–1291

HATTA, RIEKO, KAORU ITO, YOSHITSUGU HOSAKI, TAKAYOSHI TANAKA, AIKO TANAKA, MIKIHIRO YAMAMOTO, KAZUYA AKIMITSU AND TAKASHI TSUGE, A conditionally dispensable chromosome controls host-specific pathogenicity in the fungal plant pathogen *Alternaria alternata* 59–70

HAUBOLD, BERNHARD, JÜRGEN KROYMANN, ANDREAS RATZKA, THOMAS MITCHELL-OLDS AND THOMAS WIEHE, Recombination and gene conversion in a 170-kb genomic region of *Arabidopsis thaliana* 1269–1278

HECK, IMMANUEL S., JOSEPH D. SCHRAG, JOAN SLOAN, LINDSEY J. MILLAR, GHASSAN KANAN, JAMES R. KINGHORN AND SHIELA E. UNKLES, Mutational analysis of the Gephyrin-related molybdenum cofactor biosynthetic gene *cnxE* from the lower eukaryote *Aspergillus nidulans* 623–632

HIPFNER, DAVID R., KATRIN WEIGMANN AND STEPHEN M. COHEN, The *bantam* gene regulates Drosophila growth 1527–1537

HOWELL, ELAINE C., GUY C. BARKER, GARETH H. JONES, MICHAEL J. KEARSEY, GRAHAM J. KING, ERIK P. KOP, CAROL D. RYDER, GRAHAM R. TEAKLE, JOANA G. VICENTE AND SUSAN J. ARMSTRONG, Integration of the cytogenetic and genetic linkage maps of *Brassica oleracea* ... 1225–1234

HWANG, HYUNG-SEO, AND KIWON SONG, *IBD2* encodes a novel component of the Bub2p-dependent spindle checkpoint in the budding yeast *Saccharomyces cerevisiae* 595–609

IIZUKA, MASARU, HIDENORI TACHIDA AND HIROTSUGU MATSUDA, A neutral model with fluctuating population size and its effective size 381–388

INNAN, HIDEKI, A method for estimating the mutation, gene conversion and recombination parameters in small multigene families 865–872

ISLAM-FARIDI, M. N., K. L. CHILDS, P. E. KLEIN, G. HODNETT, M. A. MENZ, R. R. KLEIN, W. L. ROONEY, J. E. MULLET, D. M. STELLY AND H. J. PRICE, A molecular cytogenetic map of Sorghum chromosome *1*: Fluorescence *in situ* hybridization analysis with mapped bacterial artificial chromosomes 345–353

ITO-HARASHIMA, SAYOKO, PHILLIP E. HARTZOG, HIMANSHU SINHA AND JOHN H. MCCUSKER, The tRNA-Tyr gene family of *Saccharomyces cerevisiae*: Agents of phenotypic variation and position effects on mutation frequency 1395–1410

JIANG, NING, ZHIRONG BAO, SVETLANA TEMNYKH, ZHUKUAN CHENG, JIMING JIANG, ROD A. WING, SUSAN R. MCCOUCH AND SUSAN R. WESSLER, *Dasheng*: A recently amplified nonautonomous long terminal repeat element that is a major component of pericentromeric regions in rice 1293–1305

JOHNSON, NORMAN A., Sixty years after "Isolating Mechanisms, Evolution and Temperature": Muller's legacy 939–944

KARATHANASIS, ELISSA, AND THOMAS E. WILSON, Enhancement of *Saccharomyces cerevisiae* end-joining efficiency by cell growth stage but not by impairment of recombination 1015–1027

KASULKE, DANIELA, STEFANIE SEITZ AND ANN E. EHRENHOFER-MURRAY, A role for the *Saccharomyces cerevisiae* RENT complex protein Net1 in HMR silencing 1411–1423

KEMA, GERT H. J., STEPHEN B. GOODWIN, SONIA HAMZA, ELS C. P. VERSTAPPEN, JESSICA R. CAVALETTO, THEO A. J. VAN DER LEE, MARJANNE DE WEERDT, PETER J. M. BONANTS AND CEES WAALWIJK, A combined amplified fragment length polymorphism and randomly amplified polymorphism DNA genetic linkage map of *Mycosphaerella graminicola*, the septoria tritici leaf blotch pathogen of wheat 1497–1505

KENCHINGTON, ELLEN, BARRY MACDONALD, LIQIN CAO, DEFKALION TSAGKARAKIS AND ELEFTHERIOS ZOUROS, Genetics of mother-dependent sex ratio in blue mussels (Mytilus spp.) and implications for doubly uniparental inheritance of mitochondrial DNA 1579–1588

KING, J., I. P. ARMSTEAD, I. S. DONNISON, H. M. THOMAS, R. N. JONES, M. J. KEARSEY, L. A. ROBERTS, A. THOMAS, W. G. MORGAN AND I. P. KING, Physical and genetic mapping in the grasses *Lolium perenne* and *Festuca pratensis* 315–324

King, J., L. A. Roberts, M. J. Kearsey, H. M. Thomas, R. N. Jones, L. Huang, I. P. Armstead, W. G. Morgan and I. P. King, A demonstration of a 1:1 correspondence between chiasma frequency and recombination using a *Lolium perenne/Festuca pratensis* substitution 307–314

Kirkpatrick, Mark, Toby Johnson and Nick Barton, General models of multilocus evolution 1727–1750

Kliebenstein, Daniel, Deana Pedersen, Bridget Barker and Thomas Mitchell-Olds, Comparative analysis of quantitative trait loci controlling glucosinolates, myrosinase and insect resistance in *Arabidopsis thaliana* 325–332

Kliebenstein, Daniel J., Antje Figuth and Thomas Mitchell-Olds, Genetic architecture of plastic methyl jasmonate responses in *Arabidopsis thaliana* 1685–1696

Kulkarni, Nalini H., Akihiko H. Yamamoto, Kellie O. Robinson, Trudy F. C. Mackay and Robert R. H. Anholt, The DSC1 channel, encoded by the *smi60E* locus, contributes to odor-guided behavior in *Drosophila melanogaster* 1507–1516

Kuznetsov, V. A., G. D. Knott and R. F. Bonner, General statistics of stochastic process of gene expression in eukaryotic cells 1321–1332

Landry, Pierre-Alexandre, Mikko T. Koskinen and Craig R. Primmer, Deriving evolutionary relationships among populations using microsatellites and $(\delta\mu)^2$: All loci are equal, but some are more equal than others 1339–1347

Laprade, Lisa, Victor L. Boyartchuk, William F. Dietrich and Fred Winston, Spt3 plays opposite roles in filamentous growth in *Saccharomyces cerevisiae* and *Candida albicans* and is required for *C. albicans* virulence 509–519

Lee, Hakkyo, Jack C. M. Dekkers, M. Soller, Massoud Malek, Rohan L. Fernando and Max F. Rothschild, Application of the false discovery rate to quantitative trait loci interval mapping with multiple traits 905–914

Lipsitch, Marc, and Alexandra O. Sousa, Historical intensity of natural selection for resistance to tuberculosis 1599–1607

Lockshon, Daniel, A heritable structural alteration of the yeast mitochondrion 1425–1435

Luo, Z. W., Chung-I Wu and M. J. Kearsey, Precision and high-resolution mapping of quantitative trait loci by use of recurrent selection, backcross or intercross schemes 915–929

Ma, Chang-Xing, George Casella and Rongling Wu, Functional mapping of quantitative trait loci underlying the character process: A theoretical framework 1751–1762

Mason, D. Adam, Robert J. Fleming and David S. Goldfarb, *Drosophila melanogaster* Importin α1 and α3 can replace importin α2 during spermatogenesis but not oogenesis 157–170

Matsumoto, Sanae, Amitabha Bandyopadhyay, David J. Kwiatkowski, Umadas Maitra and Tomohiro Matsumoto, Role of the Tsc1-Tsc2 complex in signaling and transport across the cell membrane in the fission yeast *Schizosaccharomyces pombe* 1053–1063

Meuwissen, Theo H. E., Astrid Karlsen, Sigbjørn Lien, Ingrid Olsaker and Mike E. Goddard, Fine mapping of a quantitative trait locus for twinning rate using combined linkage and linkage disequilibrium mapping 373–379

Milac, Thomas I., Frederick R. Adler and Gerald R. Smith, Maximal power tests for detecting defects in meiotic recombination 1333–1337

Moorman, Celine, and Ronald H. A. Plasterk, Functional characterization of the adenylyl cyclase gene *sgs-1* by analysis of a mutational spectrum in *Caenorhabditis elegans* 133–142

Mortensen, Uffe H., Naz Erdeniz, Qi Feng and Rodney Rothstein, A molecular genetic dissection of the evolutionarily conserved N terminus of yeast Rad52 549–562

Muhlrad, Paul J., and Samuel Ward, Spermiogenesis initiation in *Caenorhabditis elegans* involves a casein kinase 1 encoded by the *spe-6* gene 143–155

Muirhead, Christina A., N. Louise Glass and Montgomery Slatkin, Multilocus self-recognition systems in fungi as a cause of transspecies polymorphism 633–641

Naisbit, Russell E., Chris D. Jiggins, Mauricio Linares, Camilo Salazar and James Mallet, Hybrid sterility, Haldane's rule and speciation in *Heliconius cydno* and *H. melpomene* 1517–1526

Nakamura, Toru M., Bettina A. Moser and Paul Russell, Telomere binding of checkpoint sensor and DNA repair proteins contributes to maintenance of functional fission yeast telomeres 1437–1452

Nambara, Eiji, Masaharu Suzuki, Suzanne Abrams, Donald R. McCarty, Yuji Kamiya and Peter McCourt, A screen for genes that function in abscisic acid signaling in *Arabidopsis thaliana* 1247–1255

Namy, Olivier, Isabelle Hatin, Guillaume Stahl, Hongmei Liu, Stephanie Barnay, Laure Bidou and Jean-Pierre Rousset, Gene overexpression as a tool for identifying new transacting factors involved in translation termination in *Saccharomyces cerevisiae* 585–594

Navarro, Arcadio, and Nick H. Barton, The effects of multilocus balancing selection on neutral variability 849–863

Negishi, Kazuo, David Loakes and Roel M. Schaaper, Saturation of DNA mismatch repair and error catastrophe by a base analogue in *Escherichia coli* 1363–1371

Newfeld, S. J., and N. T. Takaesu, An analysis using the *hobo* genetic system reveals that combinatorial signaling by the Dpp and Wg pathways regulates *dpp* expression in leading edge cells of the dorsal ectoderm in *Drosophila melanogaster* 685–692

Nyström, Josefin, Zai-Zhong Shen, Margareta Aili, Anthony J. Flemming, Armand Leroi and Simon Tuck, Increased or decreased levels of *Caenorhabditis elegans lon-3*, a gene encoding a collagen, cause reciprocal changes in body length 83–97

Österberg, Marita Kruskopf, Oksana Shavorskaya, Martin Lascoux and Ulf Lagercrantz, Naturally occurring indel variation in the *Brassica nigra COL1* gene is associated with variation in flowering time 299–306

Ostrowski, Stephen, Herman A. Dierick and Amy Bejsovec, Genetic control of cuticle formation during embryonic development of *Drosophila melanogaster* 171–182

Palladino, Michael J., Tricia J. Hadley and Barry Ganetzky, Temperature-sensitive paralytic mutants are enriched for those causing neurodegeneration in Drosophila 1197–1208

Palmer, Laura K., Darren Wolfe, Jessica L. Keeley and Ralph L. Keil, Volatile anesthetics affect nutrient availability in yeast 563–574

Paulsson, Johan, Multileveled selection on plasmid replication 1373–1384

Pedrosa, Andrea, Niels Sandal, Jens Stougaard, Dieter Schweizer and Andreas Bachmair, Chromosomal map of the model legume *Lotus japonicus* 1661–1672

Penton, Andrea, Andreas Wodarz and Roel Nusse, A mutational analysis of *dishevelled* in Drosophila defines novel domains in the dishevelled protein as well as novel suppressing alleles of *axin* 747–762

Pérez-Enciso, Miguel, Alex Clop, Josep M. Foch, Armand Sánchez, Maria A. Oliver, Cristina Óvilo, C. Barragán, Luis Varona and José L. Noguera, Exploring alternative models for sex-linked quantitative trait loci in outbred populations: Application to an Iberian × Landrace pig intercross 1625–1632

Petit, Rémy J., and Delphine Grivet, Optimal randomization strategies when testing the existence of a phylogeographic structure 469–471

Pluzhnikov, Anna, Anna Di Rienzo and Richard R. Hudson, Inferences about human demography based on multilocus analyses of noncoding sequences 1209–1218

Pooma, Wilailak, Christos Gersos and Erich Grotewold, Transposon insertions in the promoter of the *Zea mays a1* gene differentially affect transcription by the Myb factors P and C1 793–801

Preston, Christine R., William Engels and Carlos Flores, Efficient repair of DNA breaks in Drosophila: Evidence for single-strand annealing and competition with other repair pathways 711–720

Price, Donald M., Zhigang Jin, Simon Rabinovitch and Shelagh D. Campbell, Ectopic expression of the Drosophila Cdk1 inhibitory kinases, Wee1 and Myt1, interferes with the second mitotic wave and disrupts pattern formation during eye development 721–731

Przeworski, Molly, The signature of positive selection at randomly chosen loci 1355

Rairdan, Gregory J., and Terrence P. Delaney, Role of salicylic acid and NIM1/NPR1 in race-specific resistance in Arabidopsis 803–811

Richmond, Marsha L., and Michael R. Dietrich, Richard Goldschmidt and the crossingover controversy 477–482

Rocheleau, Christian E., Robyn M. Howard, Alissa P. Goldman, Mandy L. Volk, Laura J. Girard and Meera V. Sundaram, A *lin-45 raf* enhancer screen identifies *eor-1*, *eor-2* and unusual alleles of Ras pathway genes in *Caenorhabditis elegans* 121–131

Ruprich-Robert, Gwenaël, Véronique Berteaux-Lecellier, Denise Zickler, Arlette Panvier-Adoutte and Marguerite Picard, Identification of six loci in which mutations partially restore peroxisome biogenesis and/or alleviate the metabolic defect of *pex2* mutants in Podospora 1089–1099

Sandal, Niels, Lene Krusell, Simona Radutoiu, Magdalena Olbryt, Andrea Pedrosa, Silke Stracke, Shusei Sato, Tomohiko Kato, Satoshi Tabata, Martin Parniske, Andreas Bachmair, Tina Ketelsen and Jens Stougaard, A genetic linkage map of the model legume *Lotus japonicus* and strategies for fast mapping of new loci 1673–1683

Schenkel, Heide, Susanne Hanke, Cécilia De Lorenzo, Rolf Schmitt and Bernard M. Mechler, *P* elements inserted in the vicinity of or within the Drosophila *snRNP SmD3* gene nested in the first intron of the *Ornithine Decarboxylase Antizyme* gene affect only the expression of *SmD3* 763–772

Schlipalius, David I., Qiang Cheng, Paul E. B. Reilly, Patrick J. Collins and Paul R. Ebert, Genetic linkage analysis of the lesser grain borer *Rhyzopertha dominica* identifies two loci that confer high-level resistance to the fumigant phosphine 773–782

Schweers, Brett A., Karina J. Walters and Michael Stern, The *Drosophila melanogaster* translational repressor Pumilio regulates neuronal excitability 1177–1185

Sclafani, Robert A., Marianne Tecklenburg and Angela Pierce, The *mcm5-bob1* bypass of Cdc7p/Dbf4p in DNA replication depends on both Cdk1-independent and Cdk1-dependent steps in *Saccharomyces cerevisiae* 47–57

Seum, Carole, Daniel Pauli, Marion Delattre, Yannis Jaquet, Anne Spierer and Pierre Spierer, Isolation of *Su(var)3-7* mutations by homologous recombination in *Drosophila melanogaster* 1125–1136

Shamloula, Hoda K., Mkajuma P. Mbogho, Angel C. Pimentel, Zosia M. A. Chrzanowska-Lightowlers, Vanneta Hyatt, Hideyuki Okano and Tadmiri R. Venkatesh, *rugose* (*rg*), a Drosophila A kinase anchor protein, is required for retinal pattern formation and interacts genetically with multiple signaling pathways 693–710

Shirley, Renee L., Amanda S. Ford, M. Rachel Richards, Markus Albertini and Michael R. Culbertson, Nuclear import of Upf3p is mediated by importin-α/-β and export to the cytoplasm is required for a functional nonsense-mediated mRNA decay pathway in yeast ... 1465–1482

Shiu, Patrick K. T., and Robert L. Metzenberg, Meiotic silencing by unpaired DNA: Properties, regulation and suppression 1483–1495

Simmons, Michael J., Kevin J. Haley, Craig D. Grimes, John D. Raymond and Jarad B. Niemi, A *hobo* transgene that encodes the *P*-element transposase in *Drosophila melanogaster*: Autoregulation and cytotype control of transposase activity 195–204

Simmons, Michael J., Kevin J. Haley, Craig D. Grimes, John D. Raymond and Joseph C. L. Fong, Regulation of *P*-element transposase activity in *Drosophila melanogaster* by *hobo* transgenes that contain *KP* elements 205–215

Slechta, E. Susan, Jing Liu, Dan I. Andersson and John R. Roth, Evidence that selected amplification of a bacterial *lac* frameshift allele stimulates lac^+ reversion (adaptive mutation) with or without general hypermutability 945–956

Smolen, Gromoslaw A., Laura Pawlowski, Sharon E. Wilensky and Judith Bender, Dominant alleles of the basic helix-loop-helix transcription factor ATR2 activate stress-responsive genes in Arabidopsis 1235–1246

Soustelle, Christine, Michèle Vedel, Richard Kolodner and Alain Nicolas, Replication protein A is required for meiotic recombination in *Saccharomyces cerevisiae* 535–547

Southworth, Jeffrey W., and James A. Kennison, Transvection and silencing of the *Scr* homeotic gene of *Drosophila melanogaster* 733–746

Spencer, Hamish G., The correlation between relatives on the supposition of genomic imprinting 411–417

Spiers, Andrew J., Sophie G. Kahn, John Bohannon, Michael Travisano and Paul B. Rainey, Adaptive divergence in experimental populations of *Pseudomonas fluorescens*. I. Genetic and phenotypic bases of wrinkly spreader fitness 33–46

Sullivan, Kathleen M. C., and Gerald M. Rubin, The Ca^{2+}-calmodulin-activated protein phosphatase calcineurin negatively regulates Egf receptor signaling in Drosophila development 183–193

Sun, Jingtao, Donna Folk, Timothy J. Bradley and John Tower, Induced overexpression of mitochondrial Mn-superoxide dismutase extends the life span of adult *Drosophila melanogaster* 661–672

Tang, Hua, David O. Siegmund, Peidong Shen, Peter J. Oefner and Marcus W. Feldman, Frequentist estimation of coalescence times from nucleotide sequence data using a tree-based partition 447–459

Templeton, Alan R., "Optimal" randomization strategies when testing the existence of a phylogeographic structure: A reply to Petit and Grivet 473–475

Thon, Geneviève, Pernilla Bjerling, Camilla Marie Bünner and Janne Verhein-Hansen, Expression-state boundaries in the mating-type region of fission yeast 611–622

Tijsterman, Marcel, Joris Pothof and Ronald H. A. Plasterk, Frequent germline mutations and somatic repeat instability in DNA mismatch-repair-deficient *Caenorhabditis elegans* 651–660

Toomajian, Christopher, and Martin Kreitman, Sequence variation and haplotype structure at the Human *HFE* locus 1609–1623

Underkoffler, Lara A., Laura E. Mitchell, A. Russell Localio, Shannon M. Marchegiani, Justin Morabito, Joelle N. Collins and Rebecca J. Oakley, Molecular analysis of nondisjunction in mice heterozygous for a Robertsonian translocation 1219–1224

van Swinderen, Bruno, Laura B. Metz, Laynie D. Shebester, C. Michael Crowder, A *Caenorhabditis elegans* pheromone antagonizes volatile anesthetic action through a Go-coupled pathway 109–119

Waples, Robin S., Effective size of fluctuating salmon populations 783–791

Welch, J. J., and D. Waxman, Nonequivalent loci and the distribution of mutant effects .. 897–904

Wieczorek, Douglas J., Lisa Didion and Michael Feiss, Alterations of the portal protein, gpB, of bacteriophage λ suppress mutations in *cosQ*, the site required for termination of DNA packaging 21–31

Wilkins, Jon F., and John Wakeley, The coalescent in a continuous, finite, linear population 873–888

Wooding, Stephen, and Alan Rogers, The matrix coalescent and an application to human single-nucleotide polymorphisms 1641–1650

Workman, Michael Scott, Larry J. Leamy, Eric J. Routman and James M. Cheverud, Analysis of quantitative trait locus effects on the size and shape of mandibular molars in mice 1355

Xia, Xuhua, Ting Wei, Zheng Xie and Antoine Danchin, Genomic changes in nucleotide and dinucleotide frequencies in *Pasteurella multocida* cultured under high temperature 1385–1394

Yan, Christopher M., Kenneth W. Dobie, Hiep D. Le, Alexander Y. Konev and Gary H. Karpen, Efficient recovery of centric heterochromatin *P*-element insertions in *Drosophila melanogaster* 217–229

Yang, Rong-Cai, Analysis of multilocus zygotic associations 435–445

Yu, Ning, Feng-Chi Chen, Satoshi Ota, Lynn B. Jorde, Pekka Pamilo, Laszlo Patthy, Michele Ramsay, Trefor Jenkins, Song-Kun Shyue and Wen-Hsiung Li, Larger genetic differences within Africans than between Africans and Eurasians 269–274

Zapata, Carlos, Concepción Núñez and Teresa Velasco, Distribution of nonrandom associations between pairs of protein loci along the third chromosome of *Drosophila melanogaster* 1539–1550

Zhang, Xu-Sheng, Jinliang Wang and William G. Hill, Pleiotropic model of maintenance of quantitative genetic variation at mutation-selection balance 419–433

Zhang, Ze, Nobuyuki Inomata, Tomohiro Ohba, Marie-Louise Cariou and Tsuneyuki Yamazaki, Codon bias differentiates between the duplicated *Amylase* loci following gene duplication in Drosophila 1187–1196

Zhang, Zhizhou, Ushasri Varanasi and Robert J. Trumbly, Functional dissection of the global repressor Tup1 in yeast: Dominant role of the C-terminal repression domain 957–969